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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BELL, CHARLES NEWTON

ART UNIT

PAPER NUMBER

4116

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/506,599	<b>Applicant(s)</b> DI VITO ET AL.	
	<b>Examiner</b> CHARLES BELL	<b>Art Unit</b> 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-69 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/10/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. In response to the Preliminary Amendment filed on September 3, 20045, claims 1-34 have been cancelled and the newly added claims 35-69 are pending.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 60-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 60-66, the recitation is unclear and indefinite, because Applicant has failed to further define any additional structural elements, i.e. all the needed structural elements of the air conditioning system are missing. Instead, Applicant has presented method type recitations in a device claim, which for the purpose of examination, will be interpreted as statements of intended use. Without the needed structural elements, the claimed air conditioning system cannot perform the functions therein described.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 35-44, 50, 51, 55, 57 and 67 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikeda et al., (U. S. Pat. No. 5,634,348).

In regard to claims 35-37, 39-41 and 67, Fig. 7 of Ikeda et al. discloses an air conditioning system for heating and/or cooling a passenger compartment of a motor vehicle, comprising a compressor (1, and see col. 6, ln. 49), the compressor powering at least two air conditioning circuits at the same time (via 2-5, 7 and 10, and see col. 6, ln. 45-61) (as per claim 35); wherein the at least two air conditioning circuits include a first circuit for cooling supply air for the passenger compartment and a second circuit for heating supply air for the passenger compartment (3 and 4, and see col. 7, ln 1-5) (as per claim 36); wherein the first circuit can be used for cooling at the same time the second circuit is used for heating (via 3, 4, 7 and 10, and see col. 6, ln. 45-47) (as per claim 37); wherein an expansion valve (5, and see col. 6, ln. 53) is located downstream of the branch point in the second circuit (as per claim 39); wherein a check valve (11, and see col. 6, ln. 53) is located downstream of the branch point in the first circuit (as per claims 40 and 41); wherein waste heat of hot gas is used for heating (4 via 7, and see col. 6, ln. 56-59) (as per claim 67.)

In regard to claim 38, Fig. 7 of Ikeda et al. discloses the air conditioning system of claim 35, wherein the compressor includes a high-pressure side and a low pressure side (see col. 6, ln. 49 and 55-56), the at least two air conditioning circuits located downstream of the high pressure side (via 2-5, 7 and 10, and see col. 6, ln. 45-61), and wherein a branch point (as shown by the intersection point of the heating circuit passing through component 7 and the refrigeration circuit

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passing through component 10) is provided between the high pressure side and the at least two air conditioning circuits.

In regard to claim 42, Fig. 7 of Ikeda et al. discloses an air conditioning system for heating and/or cooling a passenger compartment of a motor vehicle comprising a compressor (1, and see col. 6, ln. 49), the compressor having a low pressure side and a high pressure side (see col. 6, ln. 49 and 55-56), a valve device (7 and 10, and see col. 6, ln. 46) located downstream of the compressor on the high-pressure side, the valve device splitting a high-pressure refrigerant flow from the compressor into two streams (as shown by the intersection point of the heating circuit passing through component 7 and the refrigeration circuit passing through component 10).

In regard to claim 43, Fig. 7 of Ikeda et al. discloses the air conditioning system of claim 42, wherein the two streams comprise a first refrigerant flow and a second refrigerant flow (via 2, 3, 4, 5, 7 and 10, and see col. 6, ln. 45-61), (as per claim 35), and wherein the first refrigerant flow is used for cooling supply air for the passenger compartment and, at the same time, the second refrigerant flow is used for heating supply air for the passenger compartment (3 and 4, and see col. 7, ln 1-5).

In regard to claim 44, Fig. 7 of Ikeda et al. discloses the air conditioning system of claim 43, wherein the first refrigerant flow is coupled to a refrigeration circuit and the second refrigerant flow is coupled to a heating circuit (via 3, 4, 7 and 10, and see col. 6, ln. 45-47), and wherein, on the high-pressure side, the second refrigerant flow uses the high refrigerant temperature resulting from compression in the compressor to heat the supply air of the passenger compartment.

In regard to claims 50, 51, 55 and 57, Fig. 7 of Ikeda et al. discloses the air conditioning system of claim 44, wherein the high temperature of the second refrigerant flow is used for heating the supply air of the passenger compartment via a heat exchanger (via 4 and 7, and see col. 7, ln. 1-5) (as per claim 50); wherein an expansion valve (5, and see col. 6, ln. 52) is located downstream of the heat exchanger (as per claim 51.); wherein the heating circuit prevents window fogging (3 and 4, and see col. 7, ln 1-5) (as per claim 55); wherein the another heat exchanger reheats the refrigerant with heat from ambient air (3 and 15, and see col. 4, ln. 37-39).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 45-49, 52-54, 56 and 58-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al., (U. S. Pat. No. 5,634,348) in view of Burk et al., (PG Pub. No. US 2001/0052238 A1.)

In regard to claims 45-47, 52, 56 and 58, it is noted that Ikeda et al. does not specifically disclose the air conditioning system wherein the high temperature of the second refrigerant flow is used to heat a cooling water circuit via a heat exchanger, (as per claim 45); wherein the cooling water circuit heats the supply air of the passenger compartment via another heat exchanger, (as per claim 46); wherein an expansion valve is located downstream of the heat exchanger, (as per claim 47); wherein another heat exchanger that reheats the refrigerant with cooling water is located downstream of the expansion valve, (as per claim 52); wherein the cooling water circuit comprises a bypass added in a water circuit of a cooling water circuit (as per claim 56); wherein a volume flow of the cooling water is controllable by a thermostatic control valve (as per claim 58). However, Fig. 1 of Burk et al. teaches the high temperature of the second refrigerant flow is used to heat a cooling water circuit via a heat exchanger (3, and see paragraph [0027], sentence 2); the cooling water circuit heats the supply air of the passenger compartment via another heat exchanger(13 and 12, and see paragraph [0027], sentence 3.); an

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expansion valve (7, and see paragraph [0026], sentence 2) is located downstream of the heat exchanger; and another heat exchanger (8, and see paragraph [0026], sentence 3) that reheats the refrigerant with cooling water is located downstream of the expansion valve; a bypass (16, and see paragraph [0029], sentence 1) added in a water circuit of a cooling water circuit and a thermostatic control valve (16, and see paragraph [0029], sentences 1 and 2). Hence, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the apparatus of Ikeda et al. with the heat exchangers, expansion valve, bypass and control valve of Burk et al., resulting in an air conditioning system which would heat and/or cool the passenger compartment to avoid the fogging of windows when the engine is cold.

In regard to claims 48, 49, 53, 54 and 59, Fig. 7 of Ikeda et al. further discloses the air conditioning system, wherein a check valve (11, and see col. 6, ln. 53) is located downstream of the expansion valve (as per claim 48); wherein downstream of the check valve, the heating circuit and the refrigeration circuit are coupled to the low pressure side of the compressor (as shown by the intersection point of the heating circuit passing through component 12 and the refrigeration circuit passing through component 11) (as per claim 49); wherein a check valve (12, and see col. 6, ln. 61) is located downstream of the another heat exchanger (as per claim 53); wherein downstream of the check valve, the heating circuit and the refrigeration circuit are coupled (as shown by the intersection point of the heating circuit passing through component 12 and the refrigeration circuit passing through component 11), to the low pressure side of the compressor (as per claim 54); wherein the compressor is a variable-stroke compressor (1, and see abstract, sentence 1) (as per claim 59).



In regard to claims 60-66, Examiner notes that Applicant has claimed statements of intended use and other functional limitations, i.e. when turning on the air conditioning system to cool the passenger compartment, the cooling water circuit is decoupled from a colder, engine cooling water circuit, at least until substantially no liquid refrigerant occurs on the high-pressure side of the compressor, (as per claim 60); the cooling water circuit is opened to the engine cooling water circuit if, after the heat is transferred to the supply air of the passenger compartment, the temperature of the cooling water circuit is lower than the temperature of the engine cooling water circuit(as per claim 61); when less heat is needed to heat the passenger compartment, the second refrigerant flow is correspondingly reduced(as per claim 62); when engine cooling water in an engine cooling water circuit is warm and the passenger compartment is to be further cooled, the circulation of the cooling water circuit is shut off so that no additional heat is input into the system(as per claim 63); when the engine is started cold and the engine cooling water is to be heated while refraining from heating the passenger compartment, the cooling water circuit is opened to the engine cooling water circuit(as per claim 64); when turning on the air conditioning system to cool the passenger compartment, the supply to the compression chamber in a variable-stroke compressor is essentially shut off in order to remove liquid refrigerant from the compressor(as per claim 65); and heat input after throttling in the heating circuit is reduced if the passenger compartment is to be cooled when the engine cooling water is warm(as per claim 66). Such limitations fail to structurally distinguish the claims from the prior art of record, which is capable of being used as desired. Since the prior art structure is capable of performing the intended use, then it meets the claim.

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9. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al., (U. S. Pat. No. 5,634,348) in view of Spauschus et al., (U. S. Pat. No. 6,073,454).

In regard to claim 68, it is noted that Ikeda et al. does not specifically disclose the air conditioning system of claim 42, wherein the gases on the high pressure side reach 120 degrees C during operation of the compressor. However, Spauschus et al. teaches a refrigerant that operates at 150 degrees C, (see Col. 4, ln. 35-42). Hence, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the apparatus of Ikeda et al. with the refrigerant of Spauschus et al. to obtain an air conditioning system in which the gases on the high pressure side reach 120 degrees C during operation of the compressor.

10. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al., (U. S. Pat. No. 5,634,348) in view of Martin, (U. S. Pat. No. 5,396,777).

In regard to claim 69, it is noted that Ikeda et al. does not specifically disclose the air conditioning system of claim 42, wherein the refrigerant is CO<sub>2</sub>. However, Fig. 1 of Martin teaches an air conditioning system wherein the refrigerant is CO<sub>2</sub> (200, and see col. 4, ln. 43-46). Hence, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the apparatus of Ikeda et al. with the CO<sub>2</sub> refrigerant of Martin to obtain a air conditioning system in which the refrigerant was CO<sub>2</sub>.

### ***Conclusion***

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES BELL whose telephone number is (571)270-5538.

The examiner can normally be reached on 7:00AM - 4:30PM EST Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Cheng can be reached on (571)272-4433. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CHARLES BELL/  
Examiner, Art Unit 4116  
6/19/2008

/Joe H Cheng/  
Supervisory Patent Examiner  
Art Unit 4116